

AMATEUR RADIO



Published in the interests of Amateur Radio
by the W.I.A. (Vic. Div.). Official Organ
of all divisions of the W.I.A., A.R.A.
(N.S.W.) and the R.A.A.F. Wireless Reserve.



PRICE

6^d

JUNE, 1935

WESTINGHOUSE UNIVERSAL RECTOX INSTRUMENT

— for —
A.C. or D.C.

Voltage, Current, or Resistance Measurements

- The instrument is self-contained for the following ranges:—

0—1 milliamperere, d-c. (resistance 100 ohms).

0—1 milliamperere, a-c (resistance 5000 ohms).

0—100 millivolts, d-c. (resistance 100 ohms).

0—5 volts, a-c. (resistance 5000 ohms).

Four terminals are provided on this instrument, two for d-c., and two for a-c. No shunt or special connection is required when changing from a-c. to d-c. Simply use the d-c. terminals for d-c., and the a-c. terminals for a-c.

The following additional ranges can be obtained by the use of accessories which are ordered separately.

Volts, d-c. — 0-1-5-10-50-100-200-500-1000.

Volts, a-c. — 0-10-50-100-200-500-1000.

Ohms—0-1000-10,000-100,000.

Milliamps., d-c.—0-5-10-50-100-500

Amperes, d-c.—0-1-5-10-50.

Milliamps., a-c.—0-5-10-50-100.

Prominent High-Class Radio Manufacturers have obtained and made this Instrument their Standard.

WRITE FOR CATALOGUE, SECTION 43, 341.

ALAN S. DUKE Pty. Ltd.,
486 BOURKE STREET, MELBOURNE, C.1.
Telephone, C 2255.

AMATEUR RADIO

Published by the Wireless Institute of Aust., Victorian Division.

Vol. 3. No. 6

1st, June, 1935

INDEX

Editorial	3	Divisional Notes:	
The Use of Instruments in Amplifier and Doubler Stages	4	A.R.A.	19
The Angle of Radiation ...	7	VK3, Key Section Notes	22
Testing Crystals	9	VK4	23
Federal Executive, W.I.A.	10	VK5	24
Station Descriptions .. .	13	VK6	24
Operating and Experimental Section	17	VK7	25
		R.A.A.F.	27
		Q.S.L. Bureau	27
		Ultra High Frequencies ...	28

WIRELESS INSTITUTE OF AUSTRALIA. OFFICE-BEARERS:

Federal Headquarters:

Box 2127 "L," G.P.O. Sydney

President:

W. M. MOORE (VK2HZ)

Vice President:

J. C. PINNELL ((VK2ZR)

Secretary:

H. W. CALDECOTT (VK2DA)

Traffic Manager:

E. L. COLYER (VK2EL)

Treasurer and Publicity Officer:

W. E. C. BISCHOFF (VK2LZ)

Victorian Division

Patron:

CAPT A. E. PAYNE (VK3PP)

President:

H. KINNEAR (VK3KN)

Secretary:

R. ANDERSON (VK3WY)

Treasurer:

J. G. MARSLAND (VK3VY)

Traffic Manager:

R. H. CUNNINGHAM (VK3ML)

Magazine Committee:

H. KINNEAR (VK3KN),

V. MARSHALL (VK3UK), L. MONCUR (VK3LN) Distribution,
W. R. GRONOW (VK3WG), J. MARSLAND (VK3NY) Secretary,
R. H. CUNNINGHAM (VK3ML) Technical.

All Communications and MSS. should be forwarded to the Editor, "Amateur Radio," Box 2, P.O., South Melbourne.

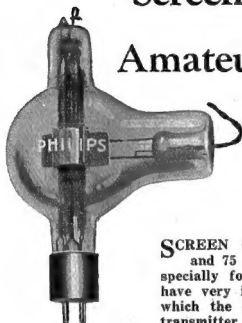
Subscription to "Amateur Radio" is 5/- per Annum (Post Free), paid in advance. Should you not receive your Copy of "Amateur Radio," notify your Divisional Secretary at once.

Advertising and Publishing Office: Address Publicity Manager, "Amateur Radio", 126 Whitehorse Rd., Box Hill, E11. Phone: WX 2429

Screen Grid Valves

For

Amateur Transmitters



Types:
QB2/75, QC05/15

quarter of actual size

SCREEN GRID Transmitting Valves for 15 and 75 watts have been designed by Philips specially for use by amateurs. These valves have very important properties, as a result of which the construction and adjustment of the transmitter can be greatly simplified. The control-grid and anode of these valves are screened from each other by a screen-grid, thus reducing anode-control grid capacity to a minimum. When used as H.F. amplifier or frequency multiplier in controlled transmitters there is practically no reaction of the anode circuit on the grid circuit, and self-oscillation is impossible with screening outside the valve. Neutralisation is unnecessary, so it is very easy to alter the wave-length at short notice. These screen-grid valves give greater amplification than triodes under the same conditions.

Table A shows the various electrical properties of the Philips amateur transmitting valves:—

CHARACTERISTICS:

Table A. Type.	Screen Grid Valves	
	QC 05/15.	QB 2/75
Filament Voltage	4.0	10.0
Filament current*	1	3.25
Saturation current*	400	2,000
Anode voltage	400-500	2,000
Screen grid voltage	75-125	300-500
Max. anode dissipation	15	75
Anode dissipation on test	20	100
Max. screen grid dissipation	3	15
Amplification factor*	225	200
Mutual conductance (slope)*	1.4	1.4
Int. resistance*	160,000	150,000
Anode-grid capacity001	.02
Max. diam. of bulb	50	100
Max length	160	210

*Approximate values.

PHILIPS

TRANSMITTING VALVES



Editorial . .

COUNCIL.

As this coming month will be the last one for councils elected for the 1934-5 period, it seems necessary and important to outline the duties of the controlling body, so that all members might clearly understand the responsibilities of that group.

After elections, the new council finds that one of its most important obligations to the membership is control of finance, this problem is, of course, simply a question of balancing budgets, but is one in which most councils have quite a lot of difficulty. The general membership can help a lot, by prompt payment of annual subscriptions.

Whilst the policy of the council is not to interfere with the internal working of sections, it still has a duty to make suggestions to each group for the improvement of the Institute as a whole.

Council has in the past had to accept responsibility for the policy of division with regard to conventions, contests, and organised experimentation, these jobs have to be efficiently arranged, and are generally placed in the hands of a sub-committee, who finalise and carry out the work.

The question of Technical Development has always been one of great difficulty, as anything on a very grand scale would entail great expenditure as well as considerable research; however, with an attempt at combined experimentation, our members will justly uphold their "Experimental" status.

However, council has to attend to instrument and book libraries, as well as such items as head-quarter stations, standard frequency transmissions, etc.

One of the most important duties of the council is to organise classes,

for, to quote our articles of association: "The provision of a centre of information, instruction, and advice on all matters pertaining to radio communication, or any development thereof." Such classes are effectively doing this work at the present time.

Our magazine, "Amateur Radio," has been one of the biggest ventures financially, and from a point of effort involved that council has yet tackled; happily its reception has encouraged us to continued effort and improvement.

The attention to section and country representatives' requests, and the appointment of such groups as a house committee to look after our club rooms, furnishings, decorations, etc., all demand serious and helpful consideration.

Considerable time and effort is given to members' problems arising out of breaches of the regulations, and in most cases, effective settlements have been arranged.

The degree of correspondence and general business received and transacted keeps our treasurer and secretary, together with their assistants, very busy indeed, in fact, every one of the members has generally two or three jobs to do.

The policy of the council is largely the responsibility of the members, who, by the exercise of their franchise at election time, put the respective councillors in this position of trust.

From the duties outlined, it is clear that every member must be a worker. The job is no sinecure, and these gentlemen deserve your co-operation in all things which will benefit the Institute and improve its value and services to members.

The Use of Instruments in Amplifier and Doubler Stages

The average amateur transmitter consists of a crystal or master oscillator, followed by a buffer stage, usually of the screen-grid or neutralised type, and then a power amplifier. Should the desired frequency be higher than that of the crystal or master oscillator, a harmonic amplifier, usually called a doubler, tripler, etc., is placed between the buffer and the power amplifier. Should the frequency be considerably higher or the desired power be great, there will usually be several stages of neutralised amplification, combined with the harmonic amplifiers.

When one proceeds to adjust a transmitter employing several doublers and intermediate stages, it is rather difficult to get the maximum gain per stage with the methods ordinarily employed by the average amateur. He usually depends entirely upon the plate current indicators, and keeps his eye on the antenna or feeder instruments, trusting that random adjustments will cause the pointer to hit the peg. His method has been to adjust for minimum plate current, or the greatest decrease in plate current, when the stage is tuned through resonance. A plate current indicator is a necessary instrument in any stage, as it indicates the power drawn by the tube, and also aids in the determination of efficiency. Its use alone cannot give all the facts, because there is no method of determining the adjustment of the input side of the tube, namely, the grid circuit. What the amateur should do is to make careful adjustment of each stage for **maximum output with best efficiency**. If this is done, he can expect longer life from his tubes, dependable operation of his transmitter, and good reports on all his contacts with other amateurs.

Here is how all this can be accomplished.

All tubes—triodes, pentodes, etc.—whether they are used in straight amplifiers or harmonic amplifiers, employ either a choke with fixed bias

or a so-called self-biasing grid leak. Sometimes an initial bias is employed, with the self-biasing grid leak, to prevent damage to the tubes should the exciting voltage fail. If a small d-c. milliammeter is inserted in series with the choke or grid leak, at the ground end of course, it will be found that a small current is flowing, the value of which depends upon the tube used and the power employed in that particular stage. This direct current is the rectified component of the radio frequency exciting voltage applied to the grid of the tube from the preceding stage. One will notice that, if the preceding stage is detuned, the current will fall, or if the stage is brought into resonance, the current will reach a maximum. If a 25,000 ohm grid leak is used, and the current is two mills., it indicates a drop of fifty volts across the leak since Volts equal Current times Resistance. The milliammeter therefore becomes an indicator of the excitation voltage delivered by the preceding stage under load.

The uses to which the indications of a grid current milliammeter may be put are numerous.

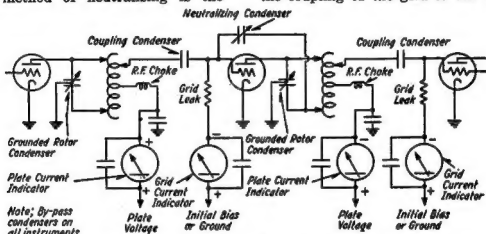
In Amplifier Stages.

The first logical use is in neutralising the stage in which grid circuit is located. Here is the procedure in neutralising. Apply the exciting voltage to the stage to be neutralised. Tune the exciting stage to maximum indication on the grid current indicator. Now change the tank tuning condenser of the stage under adjustment. As you pass through resonance, the reading of the grid indicator will drop (unless you have accidentally set the neutralising condenser at the proper point). Now continue to swing the tuning condenser through resonance, and at the same time slowly change the neutralising condenser. At some point on the neutralising condenser, it will be noted that there is no effect on the grid current. This point is the proper setting

of the neutralising condenser. In the course of the adjustment, the grid current may have fallen or increased. This is due to the detuning effect on the tank circuit of the exciting stage. It will be necessary to readjust the tank condenser of the exciting stage during the neutralising procedure. At all times try to keep the grid current at a maximum by correcting this detuning effect. When no change is noticed on the grid current indicator when passing through resonance, the stage may be considered as properly neutralised. For low power stages, this method is the only one available that will give exact adjustments, and it certainly is extremely sensitive. This method of neutralising is the

longer than its diameter. A long choke is usually less influenced by the surrounding metal parts of the amplifier. When the choke operates properly, it will be found that, although the grid current, as indicated by the instrument, may be somewhat lower, the output of the stage will be higher. It is advisable to insert another grid indicator in the grid circuit of the following stage so that the output of the stage under adjustment may be noted as adjustment proceeds. It is not necessary to apply plate voltage to this following stage, since all that is being used is the rectifying action of its grid.

It is also often possible to improve the coupling of the grid to the excit-



came whether the neutralising be effected through a split plate coil or split grid coil. Keep the tank circuit of the exciting stage in tune at all times.

The next use to which a grid indicator may be put is the proper selection of the grid leak or to determine if the choke is operating satisfactorily. If the grid leak is varied, say from 1000 to 100,000 ohms, at some point it will be found that the product of the value in ohms times the grid current in amperes will be a maximum. This indicates the value which gives the best load or impedance match, and at this point the exciting voltage is the highest.

The choke should preferably be wound so as to have a minimum distributed capacity, and be of such form as to have a small external field. Such a choke would be space wound for high frequencies and for lower frequencies could be layer wound, but divided into several sections. In either case the choke should be several times

ing stage by noting the effect of changing the value of coupling capacity, and choosing one that gives the greatest value.

These adjustments may be quickly made, and when completed will assure the amateur that he is getting the most from each stage.

It will be noted that no mention has been made of applying the plate voltage to the stage under adjustment, and this is not necessary except to check the completed adjustment. The application of the plate voltage will cause the grid current to fall. This is due to the change in grid impedance which accompanies the change in plate impedance when the tube is under load. Normally, this change will be fairly small, but should the tube be working at several times its rated plate voltage the change may be quite large. It might be advisable under these conditions to try a slightly different value of grid resistor.

In Harmonic Amplifiers (Doublers, Triplers, etc.).

The ordinary amplifier is designed to give maximum output on the frequency at which it is excited, whereas it is the purpose of the harmonic amplifier to produce distortion in its output, which is due to the presence of harmonics. Its function is to produce harmonics of sufficient value, so that they may be amplified through the tube, and then picked off its tuned plate circuit. Ordinarily, harmonics of small magnitude exist in the exciting voltage, and these may be amplified and picked up in the tuned plate circuit. If a high gain is desired through a stage in the course of doubling, it is customary to use a high Mu tube, and operate it with a high bias, Class C, and over-excite its grid. A tube operating under these conditions will often generate harmonics as strong as the fundamental frequency.

This is what the amateur wants, since he does not care to employ one or more stages of amplification between each doubler. It is possible to get voltage gains as high as four through a doubler and three through a tripler. These gains may fall off at the high frequencies, but they are to be expected from a properly adjusted harmonic amplifier.

Another form of harmonic amplifier, known as a "saturated" amplifier, is used in connection with synchronised broadcasting, and also in some forms of frequency standards. It is a tube whose grid is over-excited so as to drive it positive to a point where the plate current saturates the filament. This produces a "square" top wave which is rich in harmonics, and it is possible to pick off harmonics of lower frequency than that of the exciting voltage. It has little application to amateur radio.

Since it is not customary to neutralise a harmonic amplifier, the main use of a grid indicator is to obtain best adjustment of leak or choke, and coupling capacity, and, of course, the highest exciting voltage. It is desirable to use another grid indicator on the following stage, so that the adjustment which favors the desired harmonic may be checked. It will be necessary to apply power to the plate of the harmonic amplifier to watch these adjustments.

The method of determining when

these adjustments are correctly made follows that outlined under the heading, "In Amplifier Stages."

General Notes.

It is considered excellent practice to use condensers with split stators and then ground the rotor, a custom which is readily adaptable to neutralised amplifiers or push-pull amplifiers. A stage so equipped is quite free from parasitic oscillations. A tank circuit, depending upon a by-pass condenser at the ground potential point of the coil, to by-pass parasitic oscillations, causes them to follow a high impedance path from the plate to ground. There is also a possibility that they may circulate through the power supply, and cause feed-back. When a grounded rotor condenser is used, a low impedance path is provided, and a small choke between the centre of the coil and the plate supply will prevent parasitic oscillations from entering the plate supply.

Regarding neutralising, good practice requires an exact physical balance on the inductance. By this is meant, for example, that if the plate tap is exactly ten and one-fourth turns from the ground point or centre of the inductance place the neutralising tap at exactly ten and one-fourth turns on the opposite side of the centre of the coil. This insures that, when the stage is neutralised, not only will the feed-back voltage be the same, but it will be exactly 180 degrees out-of-phase, and phase relation of the feed-back voltage is quite important. When a different number of turns are used in the neutralising winding, the voltage balance may be exact, but when power is applied the stage will be badly off neutralisation. This physical balance is very essential when operating at the higher frequencies, say ten to sixty megacycles, and quite important if the stage has considerable power. Care should be taken to keep the plate and the neutralising leads the same length. Use of a single small neutralising condenser is better than several larger ones in series, as the losses in such a combination of condensers may be quite large.

The split-plate-coil type of neutralisation may be combined with the split-grid-coil type, and by this method a stage that is inclined to be cranky can be freed of extra connections.

The Angle of Radiation

By R. BEURING, B.Sc., B.Eng., VK3RB.

This subject was brought up over the lunch-table the other day, among several Institute members. It immediately resolved itself into several sub-headings:—

1. What is the most desirable angle of radiation?
2. How can one get it?
3. How can one measure it?

The answer to the first question calls for a discussion on short-wave propagation. The idea of a reflecting layer in the upper atmosphere is familiar, but it is worthwhile to consider its behaviour in some detail.



On the short-wave bands, radiation directly along the earth's surface is rapidly absorbed, so that for communication over distances of more than thirty or forty miles, we must depend entirely on indirect or reflected radiation. The height of the reflecting layer varies from, say, fifty to two hundred miles, so that, for communication with a station distant fifty miles, we depend on radiation directed upwards at an angle of over 45 degrees to the horizontal, as in the ray path shown in figure 1 from T to R1. As the distance to the receiving station increases, the direction of the useful radiation approaches nearer the horizontal; but it is found that reflection takes place at the surface of the earth as well, so that radiation may reach a distant station by several different paths, involving different numbers of reflections. Three possible paths—of one, three and five reflections—are shown from T to R2 in figure 1. It does not, however, follow that the amount of signal energy reaching R2 will be the sum of the amounts carried over the separate paths, as these are of different lengths. The atmospheric conditions giving rise to reflection are constantly varying, and the phase relation of the signals at R2 from the various paths

will likewise vary, resulting in fading and other effects. It would then seem reasonable to restrict the emitted radiation as far as possible to one path. Reflection of the signal will always be accompanied by a certain amount of absorption, and to keep this as small as possible it is advisable to depend on a transmission path involving the smallest possible number of reflections; this, for long distance transmission, will be a path meeting the earth's surface tangentially. In addition, and particularly on the shortest waves, under some conditions radiation striking the reflecting layer at a steep angle will not be reflected, but will pass out into space and be lost. This will be the case when the skip phenomenon is evident at moderate distances, as in interstate work; and is the rule rather than the exception below 15 metres. It appears, then, that for short and moderate distances, one should aim at distributing radiation over all angles to the horizontal; but, for long distance work, radiation should be concentrated in a direction fairly close to the horizontal, thus avoiding fading to some extent when reflection conditions are good, and making fullest use of the available power when conditions are bad. On the 10- and 5-metre bands, where reflection takes place only rarely, high-angle radiation is practically valueless.

Control of the angle of radiation is a matter of aerial design; and it may be stated immediately that the higher the masts available, the more closely it is possible to concentrate radiation in a nearly horizontal direction. The general theory of aerial design will not be discussed at length; but a few points of theory will be mentioned, and some typical aerial systems discussed.

A half-wave aerial in free space—not near the earth—does not radiate in the direction of its length. The field strength at different angles to this direction varies in accordance

with the well-known circle diagram, figure 2.

More complicated aerial systems are usually regarded as assemblies of half-wave units, and the interference effects in different directions between the radiation from the various units is calculated. Downward radiation reflected from the earth's surface must also be considered; assuming the earth to be a good conductor, this is



most simply done by imagining another aerial, a mirror image of the actual one with respect to the earth's surface. The polarity of any point of the image is opposite to that of the corresponding point of the actual aerial.

A quarter-wave Marconi type vertical aerial, with its image, is of similar properties to a half-wave aerial in free space. No radiation takes place in a vertical direction, and the field is a maximum in a horizontal direction. At an angle of 30 degrees to the vertical, the field strength is half of the maximum value. The field strength will be the same in all horizontal directions; this applies to all systems using a single vertical radiating wire.

A vertical half-wave, with its lower end insulated, gives rise to interference at steep angles between the radiation from the actual aerial and the image; horizontally, however, the two are in phase. Such an aerial, then, is a step nearer our ideal than the quarter-wave Marconi.

A full-wave aerial in free space produces interference at right angles to its length. If, however, a phasing coil (a quarter-wave Zepp feeder will do for this) be inserted at its centre, we have the same condition as in the half-wave vertical aerial near the earth. If we stand our full-wave aerial with phasing coil on the ground, we obtain a still sharper concentration. This suggests, as a possibility for amateur work, where a 70- or 80-ft. mast is available, a 40-metre half-wave vertical aerial with a current feeder connected directly into the centre. On the 20-metre band, where

low-angle concentration is even more valuable than on the 40 band, the feeder will act as a voltage feeder, giving the necessary phase reversal, and the system conforms with the full-wave system last described.

In commercial practice, units of several half-waves separated by phasing coils are often used; but the system just described makes as heavy demands on space and the pocket as most amateurs are prepared to meet. Where space is available, however, a long horizontal harmonic aerial—two or three wave-lengths—in the direction in which communication is desired, should be considered.

The third question? Well, strictly, it calls for a balloon and a field intensity set. But the aerial systems suggested are pretty fool-proof, provided that there is half-a-wavelength or so of clear ground, and no obvious screening round them. If interstate reports fall off, and DX reports increase, however, it is a fair sign that the aerial is doing its job.

IMPORTANT NOTICE

All Members having meters on loan from the Library are requested to return same IMMEDIATELY for stock taking.

Quartz Crystals

Accurately cut and ground from the finest quartz.

Guaranteed to be cut properly with regard to the Optic axis.

200 Mx, 160 Mx, 80 Mx, \$1.

40 Mx, \$1/10/-.

Every Crystal guaranteed to give maximum output.

Blanks for any band, unground, but guaranteed to be perfect oscillators, 7/- Special quote for quantities Oscillating Blanks, 10/-.

Obtainable from

P. R. WATSON
(VK3PY), Box 49, Warracknabeal,
Victoria.

Testing Crystals

By VK3PY and VK8AG.

Grinding crystals is at any time a tedious and thankless task, and any device for reducing hazard of expending unnecessary energy on a faulty piece of quartz should be an acquisition to the shack of all budding crystal grinders.

Such a device was invented by Dr. D. W. Dye, F.R.S., and later modified by P. Langevin; however, before dealing with the construction and application of actual apparatus, it is essential to clarify certain theoretical aspects of the problem.

First, let us consider main causes of failure, and queer behaviour of crystals, namely, twinning, low piezo-electric-effect, and structural faults.

Twinning.—The effect of twinning is that any given plate cut from a crystal may exhibit opposite polarity at adjacent points of the same face.

Twinning takes various forms, such as:—

(1) Half of each side of crystal may be at opposite polarity to other half of same side, due to right-handed portions of crystal being joined to left-handed portions, so as to have the same principal axis.

The right-handed or left-handed portions may develop their electric axes either in the same sense or in opposite senses, thus giving two varieties.

(2) The crystal may be twinned so that various parts of it develop their electric axes in opposite senses.

(3) Twinning takes place across a plane passing through a pyramid edge and making equal angles with the faces on either side of the edge, so that two crystals of ordinary appearance are joined nearly at right angles. This form of twinning is generally apparent from the shape of crystal.

There are really two methods of examining quartz for twinning:—

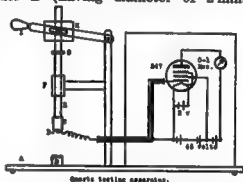
(a) Optical examination with the aid of Nicol-Prism and polarised light.

(b) Electrical examination with "free-grid" V.T.V.

The former method is only effective in certain cases, and necessitates polishing surfaces of crystal prior to

tests; whereas the latter method may be applied to all cases from raw to finished product without any preparatory.

Fig. 1 depicts apparatus required. On the left of figure is shown the mechanical portion of the device. It consists of base plate A, hollow cylinder B (having diameter of 2 mm.),



Quartz testing apparatus.

isolantite or ebonite insulating rod C attached to metal rod E, and surmounted by metal ball D. Rod E slides in tube F, and at the top of rod E, a weight H is mounted, which is free to slide up and down E, and exerts downward pressure on collar G, attached to E, whenever handle I is lowered.

The apparatus as shown is very crude, and is open to improvement, but suffices to illustrate the principle involved. Whatever the design, care should be exercised in selecting material for C, as leakage here will upset the entire operating characteristics, and result in disappointment.

As previously stated, the electrical portion of the apparatus consists of "free-grid" V.T.V., and diagram is almost self-explanatory.

The main feature is the shielded connection to D, which should be as short as practicable, shielding being connected to base-plate A. A short length of shielded Belden wire does the job admirably.

The other important feature is the earthing of apparatus. Unless entire outfit is properly shielded, and the earth connection is short and efficient, it is far better to isolate unit from all possible sources of pick-up, and

operate without earth; because an inefficient earth will only reduce effectiveness of apparatus, and introduce false readings.

Modus Operandi.—The theory of operation of the device is extremely simple. When a crystal is compressed or expanded, a voltage is generated. The grid of the tube is "free," and normally assumes small positive potential dependent upon the voltage gradient of space-charge in its vicinity. When the voltage generated by crystal is applied to the grid of the tube, the plate current either increases or decreases, depending upon whether applied voltage is positive or negative, respectively. Normally, the plate current should be about 0.75 Ma., and a good lively crystal should be capable of reducing this current to zero.

To test piece of quartz, hold it on cylinder B and allow ball D to press slowly down on it by lowering handle I slowly. The weight required depends upon the size of crystal—a raw specimen may require seven pounds or more. Remember, a slow gentle compression is far more effective than a hard jab.

By this process one is able to prospect the raw quartz, and discard worthless sections before attempting to cut it. After cutting out apparently good section, it may be subjected to further tests to ensure that both axes are not twinned before proceeding to grind it.

As grinding proceeds it may be regularly checked to make sure that no faults occur, and, moreover, points of low piezo-electric-effect may be detected, and ground thinner than other portions of crystal to equalise output. In other words, we have a device which eliminates all guesswork, and enables us to forecast accurately whether or not a piece of quartz is worth handling, and how best to treat crystal at every stage in order to obtain maximum output and stability, by the elimination of low spots, and indicating where a slice can be ground off the side of crystal to remove twinned portion. and so make a crystal, that would otherwise be either erratic or a complete failure, a really excellent slab.

It is interesting to note that an X-cut crystal may be perfectly O.K.

(Continued on page 25)

Federal Executive, W.I.A.

New Vice-President.—The Executive has just begun to settle down to work again following the lapse of our President, and the first duty was to elect a new Vice-President. Mr. Pinnell, the previous Vice-President, was unable to attend meetings, so it was decided to elect Mr. Peter Adams, VK2JX, as our new Vice-President and fellow-member of the Executive. Mr. Adams has a very wide technical knowledge and his experience will undoubtedly be a great asset to the Executive. Mr. Adams, we welcome you to your new position.

W.A.C.—Cards continue to roll in for W.A.C. applications, and the latest applications come from VK7JB, VK3PG, and VK2MT. While on the subject of W.A.C. applications, may I mention that the applicant must be a member of the local division of the W.I.A. before these can be granted, and, furthermore, cards should be sent to the local division of the W.I.A., who will in turn forward cards to the Executive, and at the same time state whether the applicant is a financial member of the Division. Failure to follow this procedure will result in much undue delay.

Standard Frequency Transmissions. According to a recent note in Q.S.T., the first transmissions of this sort in Australia are to take place in Adelaide this year. Perhaps the writer of this information is not aware that Standard Frequency Transmissions were made in this State as early as 1926 by the W.I.A. (N.S.W. Division), and in 1929 by the W.I.A. (Vic. Division).

Tasmanian Convention.—All matters concerning this Convention and its minutes have been dealt with fully by the Federal Executive, and the majority of the motions acted upon.

While on the subject of the Federal Convention, it might be as well to emphasise the fact that the Federal Representative, VK5GR, and Ford Wells, Recording Secretary, went to Tasmania at their own expense, and not at the expense of the Federal Executive.

Whatever the
Mitter
use



Condensers
and be
SURE

High Voltage



as used by—



6WF'S NEW RIG (NOTE T.C.C. CONDENSER)

Type No.	Capacity.	Height.	Width.	Thickness.	Working Voltage D.C.	Price.
121	.00025	1 1/2	1 1/2	1/8	1500	12/-
121	.002	1 1/2	1 1/2	3/8	1500	17/11
101	1 mf.	5	2 1/2	1	800	18/6
101	2 mf.	5	3	1 1/4	800	24/6
121	1 mf.	6	3	1 1/2	1500	24/6
121	2 mf.	6	6	1 1/2	1500	27/-
141	1 mf.	6	6	2 1/2	2500	76/6
141	2 mf.	6	6	4 1/2	2500	136/-

AUSTRALASIAN ENGINEERING EQUIPMENT CO.
PTY. LTD.,

"Evans House," 415 Bourke Street, Melbourne, C.1.

PHONE 11315

The "505"



The latest addition to their 2½ in. Instruments

0.50 Millivolts D.C.

0.5 Volts A.C.

0.1 Milliamps D.C.

0.1 Milliamps A.C.

1000 Ohms per Volt

All in the one Instrument, with Selector Switch.

Stocks Have Arrived

NOYES BROS.

(MELBOURNE) PROPY. LTD.

597-603 Lonsdale Street

Phone Central 10105

Station Description

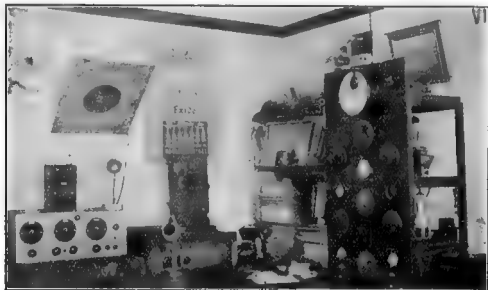
VK2WJ (Maroubra, N.S.W.).

1920 first saw 2WJ experimenting with a rolling pin coil and slider attached to a hunk of galena, and a pair of Brown's type "A" 'phones, on which heap of junk were received the local press signals from VIS, and when conditions were good, the coast stations in New Zealand were readable.

At the end of 1921 started a roving life as wireless operator on coastal and overseas ships, but still keeping

The present transmitter and general layout was commenced in 1930, and completed lately, and consists of a four-stage crystal-controlled job, working on 10, 20, 40 and 80 metres.

The transmitter stands six feet six inches high, being a rack and panel job. The bottom shelf houses all transformers, switches, rheostats, fuses, etc. The next has all filter con-



up the Ham spirit by pulling the ship's gear to bits, and trying out all kinds of receivers, especially short-wave hookups, as soon as they came over the horizon. During 1926, was transferred to shore job, and VK2WJ came into being as 201A self-oscillator transmitter, with battery supply, on which job he worked all states and New Zealand. About twelve months later, was on the air with a T250 self-oscillator and 1000 volts H.T. and grid modulation, on which rig did quite a lot of DX. This tube didn't last many years, as when I came by it, the filament was broken and had to be thumped and bumped with the filament juice on so as to unite the stray ends, when 2WJ would be on the air again till next time.

densers and chokes, two 281 rectifiers and small power pack for first two stages. The third shelf has the 47 crystal oscillator and 46 first doubler. The fourth shelf has the 210 second doubler and the 211E modulator, also the speech choke. The next one has only the power amplifier stage, which is a DET. 1. On top is a Collins coupler unit, and a big 10-inch dial hot wire ammeter, which acts as aerial meter.

The antenna is a single wire fed Hertz, half-wave for 40 metres, thirty feet high at both ends. This antenna has given best all round results to date.

The receiver consists of a 58 rf, 57 det 56 1st audio for 'phones, and 2A5 output for loud speaker.

THIS MONTH'S INTERVIEW.

Accompanied by VK3MR, a visit was made to VK3DP, of Preston. We found him at home, and, on stating our mission, we were invited into the lounge room, where upon we staggered back in amazement, for, lo and behold! here was the complete station parked in a corner like a B.C. set. There was a nice fire burning in the grate, and, as we thought of our own cold shacks, we moved a step nearer, dimly to realise what "Ham Radio de Luxe" really meant. "Oh," said 3DP at our dazed question. "It wasn't always like this. I was in the R.A.N.R. at one time, in the days of the Poulsen Arc, and I had enough of the cold," and he went on to give an amusing account of the way they used to tune for signals, covering a thousand metres or so with a flick of the dial.

The first thing we noticed about the transmitter was a figure of "Minnie" on top of the Relay Rack assembly. "No, it's not a signal director," said DP. "It was given to me as a DX mascot, but, it's a funny thing, I haven't worked any DX since 'Minnie's' been there." 3MR murmured something about YL's and DX don't go together, but was quickly put in order by Mrs. 3DP.

"What type of transmitter do you use," we asked. "C.C., of course," he replied. "I have a 47 co., followed by a 46 doubler, 46 buffer, and two more 46's in parallel as P.A."

Having a closer inspection of the transmitter, we saw a lot of little pea lamps acting as centre tap resistors, all having their tops painted a nice red color "to match the furniture," as 3MR would have it. All the power transformers are home-made, and certainly looked very efficient.

Looking at the framed certificate on the wall, we saw that the Station was licenced in November, 1933.

"Actually," said DP, following our glance, "I have been in Radio for a number of years, but I only took up the Amateur side a short time ago. I've worked 45 countries, and have W.A.C. and W.B.E., practically all my contacts being on 7mc., owing to QRM on other bands."

"Did you ever use 'phone on forty?" queried 3MR, threatening DP with a duplicate mallet to that owned by the key section chairman. "No! No! A

thousand times No!" cried DP; then added: "The dashed thing wouldn't work, or I might have done."

"You've worked quite a few South Americans, haven't you?"

"Oh, yes," he said; "they're quite easy to work on a good receiver." We were not quite sure what he meant, but let it pass. Turning our attention to the receiver, we discovered it was a T.R.F. A.C. type, using a 58, 57 and 2 A5, with plenty of punch on DX signals.

We would like to have tried out the home-made "bug" key, but, as the hour was late, we decided against it, and plodded our weary way home, thinking out schemes to build fire-places in ham shacks.

ANNUAL ELECTION OF COUNCIL MEMBERS.

Election time is upon us again, and every financial full member is expected to use his franchise, in order to obtain a council for his division who will work for the advancement of the W.I.A. and Amateur radio generally. Nominations for councillors must be in the hands of the divisional secretary not less than 21 days before the annual meeting, which is expected to be held about July 17th, 1935, full details, however, will be given next month re this meeting.

Each nomination must be signed by the two members proposing the candidate, who must state in writing on the nomination form, his willingness to stand for election, together with his signature appended.

Not less than ten days before the annual meeting, ballot forms will be posted to all full members, and must be returned to the secretary by 12 noon on the day preceding the annual meeting.

No ballot paper which is signed or which contains more than the number of names required, will be valid, so take care to observe this rule.

Attached is a list which indicates, to date, attendances of members for this year. Total meetings, 14:—

W. R. Gronow, 14; A. Mildern, 13; B. Dalton, 13; I. Morgan, 12; M. Howden, 12; B. Cunningham, 11; C. Thompson, 11; J. Marsland, 11; O. Holst, 10; H. Kinnear, 8; V. Marshall, 6; L. T. Powers, 6.

Still keeps Working when
others have Stopped . . .

THE
P5

THE P5
LABEL IS
ON THE
ENDS OF
ALL GENUINE

DIAMOND RADIO BATTERIES

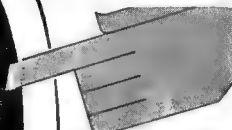
WHAT P5 IS:

1. The P5 has the great ability to deliver efficient current down to the lowest voltage stage.
2. There is no overnight collapse with P5—it will continue to "carry on" after others have stopped.
3. The very gradual decline of P5 will give ample warning before new P5's are required.
4. Thus P5 guarantees increased service, absolute dependability and unvarying consistency.

**Make Your
Receiver and
Transmitter**

"LIVE"

by Installing —



DIAMOND TORCH REFILLS
have the same P5 qualities
of Dependability, Consistency
and Increased Service.



**WIDDIS DIAMOND DRY
CELLS PTY. LTD.**

**119 HAWKE STREET,
WEST MELBOURNE**

PHONE F 1175

OBTAINABLE NOW EVERYWHERE

12th Edition Radio Amateur Hand- book. 1935

Stocks arrived from U.S.A. this week. Sweeping changes in short wave radio technique have been made since publication of the last edition. These changes have called for a drastic revision of the book. The chapters devoted to apparatus design and construction have been re-written all through with new illustrations and new circuit designs. Needless to say the new methods and technique which have recently almost revolutionised ultra high frequency works have been treated in detail.

Price: 7/6
Plus 5d. postage

Q.S.T. for 1 year and
Membership to A.R.R.L. 18/-

SPECIAL OFFER!!! 12th Edition Handbook and 1 Year Q.S.T. for 24/- NOTE. If your present sub. to Q.S.T. has not yet expired, we will extend it for a full twelve issues and send you the hand book immediately upon receipt of 24/-

McGILLS AGENCY
183-5 Elizabeth St. Melbourne
(The G.P.O. is opposite)
Cent. 8118.

(Send stamped addressed envelope for our free catalogue of books on Radio, Sound Projection, Flying, Television, Refrigeration.)

Microphones VEALLS can supply Modern Types for Amateur Stations



Plezo Astatic Microphones

MODEL D104 **£7/15/0**
as illustrated

BRUSH CRYSTAL MICROPHONES

G252P £27/10/0; H252P £17/10/0;
G456P £39/10/0; L252P £16/10/0;

B.G.E. HOME BROADCASTERS

Small Table Microphone. Complete
Transformer suitable for use with a small
P.A. Amplifier 39/6

Write for Illustrated Price Lists
and full Particulars

VEALLS

243-249 Swanston St., Melbourne
168 Swanston St., Melbourne
299-301 Chapel St., Prahran
3-5 Riversdale Rd., Camberwell
Cent. 8058 (6 lines), 10524,
Wind. 1605, W 5160.

Operating and Experimental Section

28 AND 56 M.C. SECTION.

Conducted by VK3JJ.

The conditions prevailing on 28 mc. during April were again suitable for DX work, and proved that the contacts made in March were not due to the abnormal weather at the time.

W6VQ, W6DIO, X1AY, and J2HJ have been the most regular DX stations heard, and the former has had over 100 QSO's with VK and ZL. He is using a self excited transmitter with 1 K.W. input, and has worked the following VK's:—2EP, 2LZ, 2HC, 2HY, 2YC, 3BW, 3YP, 3NM, 3OC, 3HK, 3JJ, 3BQ, 3WL, 3KX, 3MR, 4BB, and 7NC. That log should be enough to induce dozens of W's to try 28 mc. X1AY has a rather chirpy DC signal obtained from a pair of 210's in P.P. at 60 watts input.

The increase in strength of ZL and VK6 signals over those obtained in December, when they last came through, was really surprising; and, between 11 a.m. and 3 p.m., ZL1BA, ZL2GQ, ZL2BN, ZL2KK, ZL2PC, and VK6SA, often reached R8/9, the latter having quite a number of contacts on 'phone. He reports hearing W6VQ, R3, ZL3AJ, ZL2GY, and has worked J2HJ, J2IS, and several VK2, 3, and 4's. VK6RA got going again, and had his first interstate QSO with VK2HY.

The results obtained by VK2LZ and VK2EP have eclipsed all others, and they have clearly demonstrated what the 28mc. band is capable of. 2LZ had a particularly good run on March 31 by working W2TP, W9FFX, X1AY, J2HJ, and 10 W6's, much to the amazement of 2NS, who visited him on that day. 2EP has had 110 QSO's with North America, and at times a CQ is answered by quite a number of W's. Amongst those worked are X1AY, J2HJ, J2IS, W4AJY, W3AWN, W4TZ, W4MR, W6DIO, W6CIS, W6JN, W6UP, W6DGW, W6CAL, and many other W6 stations. He seems to have an excellent location, and is using a 7mc. pentode C.O., TC04/10 F.D., 800 F.D. and P.P. 800's in the P.A. This is modulated by two 210's

in Class B with 700 plate volts, and several DX 'phone contacts have been had. 2EP also tried an 8-wire Franklin type beam antenna, but owing to the QRM brought in by it, he discarded it in favor of the single wire full wave antenna.

In Vic. considerable difficulty has been experienced in raising the DX, and apart from W6VQ and J2HJ, the only other QSO was between VK3YP and X1AY. Some of the stations heard are W4TZ, W4AJY, W4AJX, W9NY, W5BDT, W8DL, W6DIO, W6ALD, J2IS, and J2BY, but their signals have generally been weak and all efforts to contact them have failed. Several VK8's have made improvements to their gear, the most noticeable being 3BQ and 3YP, who are now using their 800's as neutralised P.A.'s, and are very much stronger locally. VK3MR and VK3KX who have been very successful on 7 and 14 mc., have now tuned up on 28mc., and it did not take them long to work W6VQ! 3KX's signals have been logged by 3NM, at a distance of 100 miles, but as slight fading was noticed, it was thought to be a reflected wave.

VK2HY and VK2YC have a suspicion that their TRF receivers have nothing on 2LZ's super, and their results are more in line with those obtained in Victoria, W6VQ being the only W QSO. The former seems to be somewhat directional to the west, as 6SA reports him as the most consistently strong East Coast station. 2YC might have missed his contact with W6VQ but for the prompt action of 2BX! The latter's Xmitter was dismantled, and while listening to the DX and hearing no sign of 2YC, he thought something might be wrong with Jim's receiver. He took his receiver over to 2YC's, whom he found in a frenzy after chasing a bad connection all the morning! 2BX's receiver was put into action, and W6VQ was the next QSO. Mrs. 2YC then came in and had a chat with W6VQ, so now claims to be the first YF to work W on 28 mc.!!

Judging from the stations heard calling them, VK4BB, VK4GK, VK4XN, and VK5HG must have done fairly well, but at present it is not known what DX they actually worked.

Reviewing the work performed on 28mc. over the past few months, it becomes apparent that conditions are fast approaching those of 1929 and 1930. The 14mc. band has also shown a gradual improvement during the past eighteen months, which seems to indicate that the 11-year cycle theory is correct. If so, the period of minimum refraction at high frequencies must have taken place somewhere in 1932, and not 1934 as is generally supposed. It is probable that 28mc. will be useful for DX for the next five years, with a possible peak in 1937.

56mc. work is at a standstill in Victoria at present, but reports in N.S.W. and Queensland, considerable success is being obtained with beam antennas, and distances of 50 miles are being worked with ease.

VICTORIAN 28MC. CONTEST

Owing to the extremely poor conditions existing on each of the four days selected for this contest, practically all points scored resulted from local working. On the first two days about eighteen VK3's were taking part, but on the concluding days in March, only about ten were active. The winner, VK3NM, scored 35 points and was followed by VK3JJ and VK3XK, with 26 and 18 points respectively.

INTERNATIONAL 28MC. CONTEST.

Approximate points scored during March and April, were:—

VK2LZ, 1550; VK2EP, 1358; VK2HY, 486; VK4BB, 350; VK3BW, 332; VK3YP, 254; VK6SA, 220; VK3JJ, 174; VK3HK, 159; VK2HC, 151; VK3BQ, 142; VK3NM, 134; VK3OC, 108; VK2YC, 96; VK3WL, 87; VK3KX, 73; VK7NC, 73; VK3MR, 72; VK2XY, 50; VK5HG, 50; VK4GK, 48; VK4XN, 36; VK5GR, 21; VK6RA, 20; VK2BX, 6.

Conditions generally seem to be improving slightly at present. Particularly is this the case with 3.5 mc. and 14 mc.

3.5 mc.—The QRN season is practically at an end now, and this band is becoming extremely popular. ZL

sig. are coming through exceptionally well, and much 'phone work is being done at present between VK and ZL. All the 'phone and would-be 'phone on this band causes a lot of QRM, which makes copying a rather weak key sig. A very interesting job. Hi!

7 mc.—This band is rather dead at present, and I have not heard of any DX, other than the usual J, W, VE, KA, etc. On most nights lately, there has been more room on this band than on 3.5 mc., which is surely rather unusual.

14 mc.—Conditions on this band have improved steadily during the month. The best time of day is the middle afternoon; i.e., from about 1400 to 1600. During this period, European sigs. are numerous, and are fairly easy to raise. An occasional W or VE may also be heard.

28 mc.—Although the DX on this band seemed to fall away a bit about a month ago, it has been gradually looking up again, however, and has now come good again. Many W, J, and ZL sigs. have been worked.

FREQUENCY MEASUREMENT.

Frequency measurement is a matter which, for some reason or other, not very much attention has been paid to in VK3. This is a remarkable contrast to other countries, notably the United States. Of course in U.S.A., the bands are crammed chock full, and so they cannot afford to waste any of their precious space. Over here, we have not had that trouble quite so badly, but certainly the position is getting worse each year. It has now got to the point where quite a few hams seem to be crowding round the edges of the bands, particularly the 7 mc. band, and, in many cases, they are getting over the edge of the band. All of which brings us back to where we started—frequency measurement.

Perhaps one of the reasons that we have not taken up frequency measurement as we should, is because of the difficulty of obtaining some standard against which we may check our frequency meters.

I believe VK5 and VK2 have made a good start in this direction, and now I wish to draw attention to a move which is being made in this direction in VK3. The chairman of the Council of the Vic. Div., VK3WG, has lately been rebuilding a frequency meter belonging to the Institute, and, after seeing it the other day, I can say that he has certainly made a very fine job of it. This meter will be checked against standard crystals, in the possession of the Institute. In a short time now, this meter will be available for frequency checks. We are letting you know a little prior to the time at which the frequency checks will be available, but we have done this in the hope that a good few hams may see fit to construct new frequency meters, or else polish up old meters which have been out of use.

I am sure that we shall do well to be prepared in this regard, as the time is undoubtedly coming when we shall need to be far more careful in matters of frequency measurement than we have in the past.

Divisional Notes

Association of Radio Amateurs

NOTES FROM HEADQUARTERS.

5mx. work has been given a lot of attention during the past few months by many amateurs, and very successful results have been obtained by using various directional arrays. Although communication between Sydney and Newcastle has not yet been made, the Newcastle Amateurs, besides 2NO and others, have been concentrating at these points. The record now stands at 73 miles.

The Q.S.L. system has been re-organised so as to give the members of the A.R.A. benefits not gained by non-members. No doubt the arrangements will create a storm of protest from a few outsiders. The A.R.A. Council saw that it was futile to run the Association's QSL Bureau as a Benevolent Society for non-members' cards any longer. Some drastic changes are to be expected during the next few months, as the new Council are determined to organise to the fullest degree.

The use of the name, W.I.A., in N.S.W. is still in abeyance, although the matter has been proceeded with further than ever before. The Association was unlucky to lose VK2BA, a councillor; but Bruce has changed his (bode to Makambo, in the Solomon Isles. VK2FQ (J. N. O'Dea) has taken over the distribution of "Amateur Radio" in this State, and R. H. W. Power, and his Secretary (Miss R. Butterfield) are to be congratulated on the fine work done by them in building up the sales to their high standard. (Hear, hear.—Editor.)

WESTERN SUBURBS NOTES. ZQZMY.

Here's a very good argument for the recognition of only one Qsl Bureau. On arrival home one day shortly after a Yank mail was greeted by a demand from the OW for 1/6, which she had laid out on surcharged cards. On checking up, was surprised to find that some of them had been Qsp from a Northern Qsl Bureau, which had merely written my address on the back of the cards, and shoved them in the letter box. The average Ham frequently is called upon to Qsp for the Yanks, and always does so cheerfully. It would be quite in order (though never to my knowledge done) for them to post the cards on, minus a stamp. For a recognised Qsl bureau, however, I reckon it's over the fence. They should have been handled in the usual way, and passed on to the Sydney Qsl branch. 2ZR was another sufferer.

Congratulations to Charlie Richardson, 2PT, on his dual success in his Navigation and Engineering exams. FB, Chas. Also took third prize, and, incidentally, the only individual prize in the Radio show with a transformer

that made all the lads' mouths water.

2CT at Drummoyne is using MOPA with a pair of 46's in last stage, and gets a fair share of DX. Thinks his location is FB, but will probably find the problem a bit more acute when 2RY's bug starts to squirt shortly.

2IO at Marrickville uses MOPA with 46 Osc. es 46 in PA input 10 watts, with a nice sig., and does really FB for Qrp on 7 Mc. F7 on W ZI, etc., being among his bag.

2KS at Marrickville, using a 3-stage XtI, but his Pa has the same fault as mine: it seems inclined to wander away from the osc., and his Qrl suffers accordingly.

Congratulations to Ivan Brown, 2RY, on the arrival of a second Op. When he eventually comes on the air he will sure have a reputation to keep up for punching a bug.

The high voltage transmission lines have been playing havoc with the local conditions during the last month or so. 2FD, 2PT, 2FO, es myself, have frequently had to close down, as working conditions were impossible. 2PT did a bit of DF work, and traced the QRM to the lines outside, carrying 33,000 volts. The electricity department, however, were not very sympathetic, and suggested it would be easier for the lads to move their Qra than for them to move the cables.

If he can be persuaded to part with it for the Ham Exhibition in August, Bill Macgowan's Sniggle Snooter should be one of the star exhibits. Have not yet had a personal demonstration, but believe it contains several improvements not found in the FBX line, including chromium plating.

Bumped into Bill McNaughton (2ZH) down in Sydney, taking a temporary holiday from looking after the gadgets at 2MO. Sez that any time any of the "A" stations want a few lessons in transmission and modulation, all they have to do is look 2MO up. I think 2MQ has nearly convinced him that he requires a S SS, and it's more than likely that Mac. will wend his way back plus the necessary junk for the construction of same, plus a couple of RK20's.

Who is that Laddie that grinds out canned music for listeners on 40 MX several nights a week? I wish he would move up towards the centre of the band. It would save him being Qrm'd, es also let some of the DX thru. Speaking of 40 fone, there were a couple of VK4 stations on the other night, R Max, plus 4ZL was one. Forget the other, but they sure came in very solid down here.

Frank, of 2FD, on occasionally at night, mostly CW, and getting out solid, put up a western suburbs record the other night with 17 Qs's from 17 Cqs after tea. Some going. Keeps a sked with Dr. Robert, XU3FK, so should be set for free medical advice.

Congratulations to Rex, 2VG, on his WAC, hooking the elusive LU on 40 at last FH, old son.

Talking of Sth. Americans, some Secretaries of State must take their geography lessons per correspondence course. About a month ago, when I got R9 from a VR who was in turn R9, it looked like a case of Dead Haddock. An hour later, when another of them passed my sigs. as R8, I smelt a rat, and commenced a few inquiries. VR2CA turned out to be one, William Podmore, who was Ex-VP1AL of the Gilbert Islands. It appears that the Secretary for State decided that the Fijian prefix of VP was confusing with the other VP's so far away, so he decided to alter it to VR. Looking at the world map, British Guiana, which is only over the other side of South America, must have appeared convenient, so Fiji becomes VR also. Some of those VK5 laddies who clicked some of the VR and Qrt in case they lost them, may not think much of the S for S Geography.

LAKEMBA RADIO CLUB NOTES.

(Affiliated with the A.R.A., N.S.W.)

The 5th Annual Reunion of the Lakemba Radio Club was held on Tuesday, May 7, 1935.

The various bodies represented were: The Radio Inspector's Dept., "Wireless Weekly," A.R.A., Waverley Radio Club, Zero Beat Radio Club, Newcastle Radio Club, Hurstville Radio Club, and Inverell Radio Club.

Mr. Carroll, representing the Radio Inspector's Dept., presented the various silver cups and replicas to the winners of the recent club contests. The winners were as follows: "Chanex-Dulytic Cup," won by 2ED; "The Slade Cup," won by 2IC; and the Receiving Members' Cup, won by Mr. W. Ellis. Prizes were also given for second place in each contest.

Community singing was very popular, many well-known tunes being played through an amplifier. The evening was voted by all as a great success, concluding at 11.15 p.m.

At the Annual Meeting of the Club, the following were elected to hold office for the ensuing year: President, Mr. A. I. Clarke, 2IC; Vice-President, Mr. E. Hodgkins, 2EH; Hon. Secretary, Mr. E. C. Delmar, 2XZ; Treasurer, Mr. H. Ackling, 2PX; Publicity Officer, Mr. W. Phelps, 2DL; Librarian, Mr. G. Brown; QSL Officer, Mr. L. Hughes, 2QP; Committee of three, Messrs. Luckman, 2JT; Warren, 2QX; and Alsop, 2CY.

At the present time there is a good deal of experimental work going on in the Club on 5 metres. Various members have constructed portable transceivers, and are carrying out many interesting experiments.

All enquiries regarding the Club will receive the immediate attention of the Hon. Secretary, 79 Park Street, Canterbury.

NEWCASTLE HAMFEST.

The Newcastle Amateur Radio Club were responsible for a very fine Hamfest, staged in Newcastle during the week-end of May 4 and 5. Some 40 Hams journeyed from Sydney to attend,

making a total of 70 odd Hams in attendance.

The majority of the visitors arrived during the Saturday afternoon, and the first official event other than the visit to club-rooms was the dinner, which was opened by the President, 2ZW, Mr. Stan. Grimmer, with some 75 present.

The usual toast to the King was observed, and then the President, Mr. Grimmer, proposed the toast, "Amateur Radio." In his speech he referred to past and present, and the spirit of comradeship present amongst amateurs. He welcomed and thanked the visitors for the attendance on the N.A.R.C. first event, incorporating the amateurs of the State. The toast to "Amateur Radio" was replied to by VK2HZ, Mr. W. Moore, who mentioned that the Ham game was possibly the greatest hobby that anyone could take up, and that the spirit prevailing in the amateur ranks was of the highest order.

The next toast was to the visitors, and was proposed by VK2ZC, Jimmy Cowan, who thanked the many visitors for their attendance.

The President of the A.R.A., VK2UX (Mr. Goyen), in replying stated it was a very great pleasure to be present, and congratulated the N.A.R.C. on their effort in organising the first event of its kind in Australia.

Mrs. Mackenzie, well known in the old days as Miss Wallace, and holder of call-sign VK2GA also replied.

Mr. Bailey, of Amalgamated Wireless Valve Co., gave a lecture on the manufacture of receiving valves, and the reason for certain processes.

The next item was the presentation by Mr. J. Moyle, representing the editor of "Wireless Weekly," of the "Wireless Weekly" Cup, won by the Club in the recent competition. Mr. Glassop responded, and thanked the donors for their generosity in awarding such a suitable trophy.

During the dinner, a "Mistakes in a Circuit" competition was being run for the major prize of the Hamfest, a type 800 valve. The circuit was of a 3-stage crystal variety, with Helsing modulator and speech amplifier to match. The circuit contained 17 recognised mistakes, and the winner, VK2LZ (Con. Bischoff), recorded 23 marks out of a possible 51, 2DY and 2HU running second.

The dinner was concluded by 2YS ex 2KB (Allan Fairhall), who thanked the donor of the prizes.

The 75 Hams then retired to their various hotels, to possibly gain a little sleep before the events of the morrow.

Representatives of Lakemba, Manly, Zero Beat, and Waverley Radio Clubs were present.

At 9 a.m. on the Sunday, the Company was again assembled, and divided into parties, either going to the B.H.P. steel works or visiting the ham shacks.

The steel works visit was much appreciated, and the visitors were shown over the major portion of the works. After spending the morning at either of the above places, the company then adjourned to Toronto, on the shores of Lake Macquarie, some 20 miles from Newcastle, and the scenery along the way was enjoyed by many. After lunching at the Hotel Toronto, the

hams were moved back to Speer's Point to the local picture theatre, where the main events of the programme were to be run. Approximately some £30 worth of gear was donated by the trade for the prizes in competitions.

The first competition was of a novel nature. The company were shown an L.C. circuit in a small transmitter, and each in turn was asked into how many amateur bands would it tune. The successful answers to this question were then asked to state to what frequency the L.C. circuit would tune at a given dial setting, the frequency happened to be 7054 k.c., and VK2CY was the winner, stating 7100 k.c.; second, VK2QR, open order for 10/6 on Lawrence & Hanson; and Mr. Finlayson, third, a set of transposition insulators.

The next contest was the speed Code at 25 to 30 words, and it was sent by VK2EL. The winner was VK2CR's second op., who won a 300 mile meter; 2WU, second, a morse key; and third, 2YL, a set of transposition insulators. 2QC ran fourth, and his efforts were highly commended, as he is unfortunately blind, and the code had to be copied down by another as he read it out. He was awarded a special prize of an accumulator.

The third contest consisted of three things: firstly, ten international prefixes were read out, and the country which each represented had to be written down; secondly, ten countries were read out, and the prefixes for each had to be noted; and, thirdly, ten Q signals were read out, and the answers to a question had to be written down. VK2LZ (Con. Bischoff) was again a winner, receiving a TCO 4/10 and TCO 3/5; VK2YL second, pair of Burnback Standoffs; and VK2EL third, a set of transposition insulators.

The fourth contest was another code test, which had to be copied letter by letter, the code being sent by VK2BV. 2 QR was the winner, a Lemek superhet. coil kit; second, 2CR second op., a pair of Burnback Standoffs; and third, 2WU, a set of transposition insulators.

The fifth competition was a memory test. 25 articles were placed in a box, and each one was given one minute in which to view the articles, and then write a list down. VK2TX was the winner, and received a Lemek all-wave superhet. kit, and VK2QC a second pair of standoffs.

A novel competition was then run, termed code under difficulties. The talkie plant was turned on, and morse was also sent, the idea being to copy the code through the din. The bagpipes seemed to be worst type of Qrm. This test was won by VK2QR, TCO 4/10, and TCO 3/5; 2CR, second op., one pair of standoffs; and 2EL third, set of transposition insulators.

The literary talent was then tested, and an ode to a dead bottle was required.

"Fare thee well, good bottle mine,
Many's the time I've seen thee shine,
In my TX just five in line,
O Treasure Dear, etc.

The above and some more won VK2XU (Gilbert. Pollock) an 1mf.

2000 v. D.C. working condenser; VK2CS, second, an 80 ma. transformer, and Bob Best, third, a set of transposition insulators.

The last prize was awarded to the Ham present from the furthest distance, and 5PK (Ralph Nancarrow) received a morse key.

A Buffet Tea was then partaken of, and afterwards the prizes were presented to the various winners by the Club President, VK2ZW (Mr. Stan. Grimmatt).

The N.A.R.C. are again to be congratulated on organising such a successful Hamfest.

NORTH SHORE ZONE NOTES. A.R.A. (N.S.W.). Z02HY.

The conditions on the various bands have been only fair. 80 mx. will be improving once again as winter conditions set in, and, if conditions overseas are any criterion, we may expect some good DX. 40 mx. has shown very little DX other than a few Yanks and Japs., etc., and we cannot expect conditions to improve here for a couple of months or so. 20 mx. night DX has practically disappeared altogether, although we still hear a stray European or the East Coast Yanks occasionally. This band, however, is quickly settling down to winter conditions, and Yankie fone stations may be heard by the score almost any afternoon. A number of European stations also came through during first part of April in the early afternoons, and quite a number of the boys were after them. 10 mx. is still fair, and Yanks are still heard; but it looks as though, by the time these notes are printed, it will have resumed its old deadness.

2AE has not been heard much since the Zero Beat Contest. What are you going to do with that tube, Dave, OM? 2DR is evidently giving radio a spell for a while. Don has been QRL "biz" lately, and finds little time to spare. 2LA paid me a visit the other day. "Smatter of fact, I thought I was pinched when he asked for me. (He's a traffic Cop, boys, so get to know him.) He is going to build an E.C. 3-valve A.C. Receiver. Reckons his old Receiver doesn't get out as far as the TX. (I've always found the reverse the case, Hi.) Anyway, he has a very nice T9 sig., and works plenty of Yanks. Rig is 3-stage job with pair of 46's p.p. final. He has a very nice location away up in the heights of Wiloughby. Jim, 2YC, having all kinds of trouble with his outfit. First his xtal stops oscillating in 40 mx. rig, in middle of QSO, then his 10 mx. rig blows one of filter condensers, with resultant weird sigs. coming from 2YC. Then his Receiver won't perk on 10 mx. properly, and, when these are all going O.K., he loses 10 mx. altogether. Never mind, Jim, when you get to that new location, guess you will work everything. It has always been a source of wonder to me how you work anything from your present location. 2DA been fairly quiet since A.R.R.L. test; also 2YC, 2XC, etc. 2HZ and 2VP, as hinted in last notes, both took unto themselves a lawful YF, also a well-known BCL, in Bill Clive, did likewise, and I'm sure

the gang all join with me in congratulating them. 2HZ has been busy moving about since the event, and has been on lookout for ideal location, and, from all accounts, he has found it, so Bill will be happy. 2VP has been heard on since it happened, so he has evidently got the YF squared off pretty early. H1. 2LZ has been sticking to 10 mx. very consistently since the Yanks have been coming through. He also fixed the old BCL transmitter so that he could work 20 mx. so that the one rig now goes from 250 to 20 mx. He has separate 10 mx. rig, using about 6 toobas, the last stage being TC1/76. Wow! 2VG and 2VM heard occasionally working each other on fone. Another nice sig. from that district is 2HA, who works plenty of DX. 2VQ been comparatively quiet, but heard frequently. Say, Jim, that note much better now, and am inclined to repeat T9. H1. Jack (2HG) still going strong, and, when no DX going, he works locals. Jack likes a rag chew, so any of you chaps hearing him, give him a shout. 2HY has not been on much during last month. Been concentrating on 10 mx. for past six months; but, unfortunately, is unable to get on much on Sundays, when DX comes through. H1. 2BS still persisting with S.E. rig; but you would never guess from his T9 note. 2WW built a single sig. super, and at last succeeded in making it perk. Next thing, he is rebuilding transmitter to xtal. with 210 final, so he will be off for a while. 2PV is heard often, but note is very rough; especially does it sound so in these days of T9 sigs. Why not try to improve it, OC?

NOTES, ZONE 8. ZO—VK2OJ.

VK2IG now active on 7 mc. band, with P.P. 171A's in TNT rig, and 6 watts input. Antenna is a doublet, and appears to function nicely.

VK2QE regularly on 7 mc., and occasionally 14 mc. Antenna is SW fed Hertz, and reports are good, with 10 watts input.

Ex-VK2QD again in Albury, and has built new cc. xmitter with link coupling from doubler to buffer stage.

VK2YI indefinitely QRT, as he is now at Griffith.

VK2UE is a recent addition to amateur ranks, and should soon be heard on 7 mc.

VK2CP gone back to Sydney after couple of months here.

Conditions on 20 mc. mostly good during daytime for the past few weeks. 80 mc. becoming more popular.

NEWCASTLE AMATEUR RADIO CLUB NOTES.

(Affiliated with A.R.A., N.S.W.)

The Newcastle gang are making a comeback on 5 mx., and from now on will be very active on this band. 2ZW has a pair of pp 10's going strong, and is just erecting a beam antenna, with a view to working VIS and 2BP. 2ZC has a tranceiver, and works 2ZW consistently. 2MS has almost completed a 56 mc. superhet. Receiver, and 2KG is also busy on a Receiver for the same band. With promises of co-

operation from 2UF and 2DG, it seems as though 5 mx. will be kept busy for some time to come.

Hams generally will be wondering what has happened to 2OF, of the copper-plate "bug" fest. Gerry has had to scrap his rig to avoid the temptation of going on the air, as he is very QRL with exams. this year.

2DG is a new ham on the air at Stockton. Best of luck, Keith, with your pp 45's.

VK3 'PHONE SECTION NOTES.

By J. R. Kling, 3JB.

There was a fair attendance at the last month's 'Phone section meeting, which was held on Tuesday, April 30, 1935.

The meeting commenced at 8 p.m., and the following stations made application for wave-lengths on the "Publicity Band": 3DH, 3BY, 3JB, 3AM, 3LU, 3ZO, 3BH, 3GY, 3FW, 3RI, 3HK, 3OV, 3JR, 3PA, 3CB, 3CR, 3FY, 3HF, 3SB, 3XL, 3LM, 3GK, 3KE, 3PQ, 3BT, 3FL, 3TM.

The Committee appointed to make arrangements for the Smoke Night made a report on the arrangements proposed, and was asked to have the night arranged to a later date, as a great many of the members could not get along on the night suggested.

It was also intimated by the Chairman that the "Ban" on the stations within five miles of 3AK had been lifted, excepting 3FL, 3FW, and 3XL.

There was also mention made of the section co-operating in another competition which was being arranged by the New Zealand DX Club on behalf of their members. Owing to the absence of Mr. Jim Kerley, the Allocations Committee members present had to carry on without his help, and the Section had to wait some time for the allocations to come out, as the task of allocating all the stations was not an easy matter. There were 27 stations to be drafted, and some wanted to operate at special times, as they were unable to operate at some periods of the day.

The Chairman drew the members' attention to a meeting which was being arranged for the following Tuesday night, at which there was to be a lecture on 56 mc. activities.

Mr. Ivor Morgan (3DH) produced a letter giving praise to the hams on the "Publicity Band," and the members received its contents with interest. The Secretary was requested to write on the Section's behalf, thanking the writer of the letter.

3JB had the pleasure of a 3-way QSO with 3DH, 3OY, and 3KW in the early hours of Monday morning a few weeks ago. 3KW, who was in Geelong, was putting out some good fone, but his music was a fair bit louder than his speech.

3DH was, as usual, at my end R plus plus, and 3OY was nearly as loud as him, though he was some distance away in Camberwell. Say, Alan, ob you certainly had some kick that night with your new rig.

There was a fair bit of discussion on 56 mc. dolgas coming from Ivor and Scottie, too. Say, Scottie, have you got the new Mollars yet. Hi! Hi!

Amateur Radio

SPA does not sound as good at West Preston as he did at Westgarth. What's the trouble, Percy ob?

GOULBURN VALLEY NOTES.

3DW.

Shepparton! Greetings, Gang. We welcome to our fold Mr. Carlisle, of Nathalia, recently passed A.O.P.C. exam., and, although at present not in possession of a call-sign, we expect to hear him on the air very soon.

3FN has had good results with his 3-stage xtal rig, and in the short time he has been active has had PB results. First QSO was with W8LEC. and, out of 157 contacts, has raised 27-W's, 2-K's, plenty of ZL's, and the rest practically VK2's. Contemplates coming up on 3.5 mc. for the winter, and hints at fone.

3SN busy rebuilding his gear into rack form. Recently issued forth with fone using 250 modulator, 3-stage speech amplifier, and Relaz block type mike. Helsing system, using single choke, and reports have been coming in fine.

3CN getting back into his old stride, and has almost completed MOPA with 47-CO, and pair 46's in parallel, for PA. Would like VK7's to look out for him on 3625 and 7250 kc's. Snow recently had the misfortune to pull down portion of the boardinghouse chimney during the erection of his antenna, and not being satisfied with that, followed the damaged portion off the roof himself. No injuries, and both doing well, HI!

3DR considering Telefunken modulation, the rest of the gang in opposition, so Mill may yet reconsider, as he is QRL at the Cannery, and not finding much opportunity to spend time in shack. Now has his 3-stage xtal rig going O.K., using 47 CO, pair 46's in parallel for doubler, and PP 210's in final.

3DW relining shack for winter months, and although still running Saturday midnight skeds with 5RH, has by mutual agreement postponed the 8 a.m. Sunday morning skeds with 3KR until the winter is over. Br-r-r-r, it's too XYZ cold, HI!

Waiting on notes from 3EP, 3SN trying to collect 'em per telephono, so, while QRX for him, will give you his DX list as promised last month. All W States three times, VS6, J, K, KA, VQ, EA, PJ, ZL, PK, and not forgetting locals. SN arrived back, and EP says that the concrete floor in his shack is not conducive to ham work, so his only times on the air at present are Sunday afternoons, when he works skeds with Jim, of 3ZK, and George, 3XJ. Not giving particulars of rig, as it's in the 2 watt class at present, and Ted is QRX for the A.C., which is expected at Rochester in August. Actually, the lines are there now, although it will be some time before the reticulation is complete. Abyssinia Samoa, next month.

KEY SECTION NOTES.

By C. Woodward, VK3YO.

The combined All Sections meeting held on May 7 was well attended. Several visitors were welcomed, in-

cluding Mr. S. Haworth, of the A.W.A. Co., and Messrs. Ehrlund and Quist, the W/T. operators from the Swedish sailing ship, "C. B. Pedersen."

It was learnt from Mr. Symonds, the representative of VK3RI, that their station was now operating on the 3.5 and 7 mc. bands, using a T.N.T. circuit, and they would be glad to QSO any member of the Key Section.

Uno Ehrlund gave an interesting account of the trip out from Sweden, and expressed a desire to see some of the Amateur Stations whilst in Melbourne. VK3UC kindly consented to arrange some trips for them, and as he speaks fluent(?) Swedish, he will be of great assistance.

VK3UK read extracts from a letter which arrived that day from our ex-President (VK3KN), who is in London on a trip, and who hopes to contact VK from some of the G Stations.

Papers were presented by Mr. R. Cunningham (VK3ML) on 56 mc. directive antennae, and by Mr. W. Gronow (VK3WG) on 56 mc. transmitting circuits. Both of these papers were accorded a tremendous ovation, and they will count in no small measure toward increasing the interest already aroused by the demonstration last month of the P.M.G., Research Dept., on practical 56 mc. communication.

VK3MR and VK3XF are now both actively engaged in 56 mc. 'phone work, and are getting good results. They are both using Transcelsvers with Class B modulation.

It was heard also that VK3XD, together with VK3AS and VK3FZ are working along similar lines.

On 28 mc. conditions seem to have petered out in VK3, although the other States are still doing good work.

14 mc. is quite good in the early afternoons for DX, and on the American 'Phone bands there are usually plenty of W's waiting for a contact. On 7 mc. the usual number of stations appear to be around, although DX is not so good as it was a month ago.

VK3RX has changed to a new QRA, and is busy getting his gear in order.

VK3XD is pounding the key with one hand, and holding a new Junior Op. on his knee with the other.

VK3JH is still threatening to go on the air.

VK3RJ was in Melbourne for the meeting, and produced over 600 QSL cards for distribution.

VE1FN has informed us that Walter Wooding, VE1ET, is on the way to VK as Radio Op. on one of the Canadian ships, and expects to arrive in Brisbane about the end of May. He hopes that he will have an opportunity of visiting Sydney and Melbourne, and meeting some of the hams before going back.

VK4 (QUEENSLAND DIVISION).

The monthly meeting of the above division was held at headquarters, Heindorff House, Queen Street, Brisbane, on Friday, May 3, before a large attendance.

After the general business a talk was delivered by VK4RY, on his recent visit to Tasmania.

On Saturday, 25th, an Aero Pageant is being held at Archerfield, and sev-

eral members will be stationed at various points near the Aerodrome to check the planes as they pass. Fone is to be used, and transmission will be on 56 mc.

Student classes are in full swing, and those desirous of joining up should get in touch with the Secretary, B1524V, G.P.O., Brisbane.

4UR (Jack Bates) is putting out a hefty signal from his 46's in Push Pull. 4LB uses 46's push pull T.P.T.G., and seems to be doing well, has an A.C. Election Coupled Receiver.

4LK is now in Cloncurry, and is at present using B Batts. Hopes to be QRO in a few weeks.

4UZ, of Toowoomba, will be off the air for some weeks, as he has accepted a position on the staff of a "B" Classer in V.I.B.

4US and 4WD are still giving code practice every Tuesday night at headquarters for the benefit of student members, and both report that their boys are doing well.

4TS appears to be busy selling tickets for Picture Benefits in aid of the W.I.A. funds.

4WT rebuilding everything from power supply to sky wire.

4AP giving 20 mx. a good try-out, only requires two Continents for his W.A.C. on Fone.

4HR has just finished rebuilding, and was recently heard testing out his fone. Quality seemed very good.

4RC continues to put out a good signal. Has now worked all Continents. Congrats.

4HA has been heard quite a lot testing out his fone. Quality does not seem the best yet, but time will tell.

A letter recently received from W6AMC advises that his call-sign has been changed, and will in future be known as W6MDJ. He is still on the same frequency, and will be looking out for all the boys.

VK5 NOTES.

By F. M. Gray, VK5SU.

1.2mc.—Same old gang.

3.5mc.—Few 'phone stations having FB rag chews.

7mc.—Rather poor. Few Yanks at indifferent strengths.

14mc.—Patchy. Sometimes good in afternoons. Yanks on 'phone, also Canadians.

25mc.—3HG, 5GR, 5JC, 5MY, 5SU, and 5FM heard recently; also W6, J, and ZL.

56mc.—5BY, 5IT, and 5DA, are still active on this band.

300mc.—Oh yeah!

5FM still keeping skeds with 2DR, and we suspect him of trying to establish a record number of QSO's with any one station!! He has had to suspend his code practice owing to working overtime.

5MY has been transferred to Berri for a fortnight, and can be heard from 5IV on 3.5mc. during the evenings.

5LD still keeping WIA traffic schedules. Having tried every other system of feeders he now intends to put in a Collins' network.

A little bird whispers that 5BM has a note which cannot be listed in the "M" code without using decimals! Me-

thinks I have heard a rumour to this effect before!

Also, the quality of 5RI on 200mx. is not what we expect from a club of its standing.

Some other stations on this band have been rather lax as regards operating hours. This is not fair to the other chaps, as it is leading to extra restrictions on this band.

It is hoped that all active 200mc. amateurs will support the test being organised by the Zedders.

3ML arrived in Adelaide to-day, on his way to Perth. He was only here for about an hour, and reports R.A.A.F. Wireless Reserve very active in Victoria after the recent camp at Laver-ton.

VK6 NOTES BY 6CP.

The usual meetings have been held during the past month, and have been fairly well attended. The President reports the AOPC classes having been finalised, and a new class is now in the process of formation. About seven students sat for last exam, and all passed the morse test. This is indeed gratifying, and great praise is due to 6LJ and 6RL for their unfailing loyalty to the students. Mention must also be made of the sterling work of 6JS and BN for the solid technical instruction given to the lads.

A new call to be heard soon is 6JG (J. Goddard). Jack is coming on with xtal Tritet for a kick-off, and anticipates adding stages as funds permit.

6AE now working M.O.P.A. Space will not permit of a full review of hams this issue, as we have on hand some dope from 6CB of the social committee.

Activities on the various frequencies are normal, but there is practically nothing to waste time about. 40 mx. in the evenings is a wash-out. On 80 mx., a few VK's and ZL's are coming in with moderate strength, and 6SA reports having heard a few W's, but failed to raise them. A keen watch on 10 mx. has produced nothing of a startling nature. On 40, there are occasional spasms of good signals in the evenings, but, taken collectively, I should say we are now going through the worst period of the year.

6GM on 80 puts out some first-class music on Mondays, Wednesdays, and Fridays, commencing 1200 GMT.

As these will be the last notes by 6CP, I take this opportunity of wishing my readers every success, and also herewith say farewell. I must thank all for the support given me, and would like to remind those in arrears to let me have subs. at once, so that I can give the new Journal Editor a good clean start for the ensuing year. Thanking you all.

One of the most successful outings yet held by the social boys took place on April 21. A mixed party of forty persons, all equipped with receivers, set out on the Kalamunda Road to find an 80 mx. xmitter hidden and operated by that sterling ham, 6BB, ably assisted by 6JW.

Many and varied were the receivers and antenna in use by the hunters. Here you could see a slap-up outfit, complete with revolving frame aerial,

and there a beautiful YL walking around her beau's receiver in circles, whilst the said beau tried to look extra specially wise as he turned the dials to find that elusive signal from 6BB, with a well-framed and technical excuse ever ready to keep the YL's temper under control. Truly we hams do expect great patience from our gentle sex!

To make a long story short, the winner turned out to be 6CX, who, arriving at the plant with a chart that would delight the heart and eye of the most noted Arctic explorer, and his directions unopened, gained top points.

Those who took part that I can bring to memory were:—

CX, assisted by CB winner.
GM, assisted by Ralph the Tiger.
KO, assisted by Mr. Wright.
RL, assisted by Mr. Weston.
KM and mixed party.
KZ with full equipment.

MN and JS, the inseparables;
and many others whose names I do not know.

At the conclusion of the hunt Mr. Hayman, our very wise and technical friend, presented to the winner a handsome silver cup, which was donated by the worthy 6BN.

Several Cine-cameras were also on the job, and the films will be privately screened to the Council shortly. The Council will then decide, after censorship has been taken, whether they will allow the rank and file to view them at a future meeting at headquarters.

6CP (C. R. COOKE).

VK7 NOTES.

By 7PA.

(Division address: Box 547E, G.P.O., Hobart.)

Extensive alterations have been made to the club rooms during the past two months, and we have been all upside down. This work is now completed, and we are getting settled again in our more spacious apartment. The membership list now tops the 100 mark, and everything looks rosy for the 1935-36 year. Amongst other improvements, a letter-box at the G.P.O. has been added. This is in accordance with the resolutions of 1935 Convention, and the principle is a good one, as any change in personnel will not now affect the receipt of correspondence.

The new address for all correspondence, which includes QSL Bureau material, should now be made full use of, and all secretaries' and QSL managers' attention is directed to same. (See head of these Notes and elsewhere.)

The last general meeting for the year was held in the club rooms on Tuesday, May 7, and the attendance was remarkably improved. The annual meeting was arranged, and it was resolved to have a smoke social in the club rooms this year as a change from the usual dinner, and a committee was charged with the arrangements. This gathering, as usual, is set down for the long week-end in June—i.e., Saturday, 1—and the usual field day associated with it will be held on Sunday, the 2nd, and is to be con-

ducted in the New Norfolk district, about twenty miles from Hobart.

On Thursday night, May 9, a sale of gear was held in the rooms, 7HL, having gone out of the ham game for the present. We understand that he has hopes of a fresh start at some future time, and we trust that he won't change his mind. Other gear is being offered for private sale by 7NC, he also having decided to give the game a spell. Possibly the bug will bite again.

The conditions on the bands here lately have not been very enticing, and general operations have been quiet.

7BJ and 7KV have been doing some 40 mk 'phone between times, to break the monotony. A few QSO's have been had with our N.W. Coast members lately, on 40 meters, and 7CK has hopes of getting his punch back again from now on; says it has rained pretty well there lately, and the plant is showing a full 250 volts again. Bad luck that Nature's provision is not more consistent.

7AR now holds the job of Inspector of BCL licences, and should find quite a variety in it. 7JH, as treasurer, has been busy with 'stute affairs, getting squared up for the annual audit, and has not had much time to spare for operating.

We had hopes of two new call signs after last exam., but they were not forthcoming, the aspirants being unfortunate enough to fail; but we wish them better luck in their next attempt, possibly in July.

This year, for the first time, the Hobart Technical College has incorporated a radio class, and it shows promise of being worth while. I believe there are over twenty students on the register. 7JB is doing the code instruction, in conjunction with it, and one YL is included in its ranks, so VK7 may sport a YL operator in the near future, as I am told she is showing good progress and is very keen.

We join with the rest in congratulating VK4YL on her achievement, and wish her many years of unfailing enjoyment in the ham game, and hope to have the pleasure of a contact with her soon.

Had the pleasure of viewing the Gazette on which you were displayed in action. Must be thrilled at being screened, 4YL, and the OM must be proud of you.

(Continued from page 10)

when tested between faces, but badly twinned at numerous points along X-axis (between edges corresponding to X-axis). Many other forms of twinning, etc., can be observed, but space does not permit further discourse. Anyone interested in subject may obtain full details from "Quartz Resonators and Oscillators," by P. Vigoureux, M.Sc., published by H.M. Stationery Office and obtainable from McGill's.

THE *Guaranteed* **WIRELESS VALVE**

Every Radiotron is laboratory tested and guaranteed by Amalgamated Wireless to retain its tonal quality and give longer life than any other valve in the world.



RADIOTRONS

ADVERTISEMENT OF
Amalgamated Wireless Valve Company Limited

Victorian QSL Bureau.

R.A.A.F. Wireless Reserve

R. E. JONES, VK3RJ.



Writing from aboard the "Aorangi," en route to Auckland, Geo. Weston, VQ6AK, of Fanning Island, gives some interesting information on radio conditions and difficulties. When at Fanning Island he used a self-excited rig, powered by a 350-volt generator, driven by a 32-volt motor. He says: "It was impossible to keep the outfit clean, with spiders, wogs, and sea-spray hovering around all the time, whilst all the mosquitoes on the Island roosted in the shack." VQ6AK hopes to be in Auckland for some years, and will shortly be heard under a ZL1 call. He will shortly QSL all stations worked from the VQ6AK QRA.

Hams ordering new supplies of QSL cards should make sure that the size conforms to the usual postcard envelope. Big cards are cumbersome, and become damaged in the mail.

Cards are on hand at the Bureau, 23 Landale Street, Box Hill, for the following VK3 hams. A stamped envelope will ensure their despatch:—

AN, AZ, BK, BX, CK, EG, EL, EM, ER, ES, ET, EQ, FC, FM, FW, GJ, GU, GW, HE, HR, JG, JK, JL, JT, KG, KY, LP, LY, LQ, NM, NG, OL, OF, OD, OZ, PC, PL, PZ, QP, QZ, RW, SP, TK, TW, TY, UJ, WD, WX, WC, XK, YD, YR, YW, ZC, ZK, ZL, ZR, ZS, Messrs. Nye.

Cards for VK3BX, EM, ET, FM, GU, JK, JL, LP, OZ, PZ, RW, WX, WC, ZC, have been on hand for some months, and will be destroyed if unclaimed by June 22.

VK3ML.—Bob Cunningham has deserted VK3 for a trip to Western Australia. We expect him back in time for the July issue of "A.R." to draw the circuits and edit our technical matter. Don't stay too long, Bob om.

The magazine committee desire to announce that the controller of our mailing department, Mr. L. Moncur, VK3LN, left Australia to visit the United States of America, where he intends to do a most comprehensive motor tour. In the meantime his department will be cared for by the secretary to the committee, Jim Marsland, VK3NY and George Manning, VK3, as his right-hand man.

Len. Moncur, we know, will represent VK amateurs worthily, and we wish him "bon voyage."

Federal Notes by the O/C.

The result of the Easter Reserve camp at Laverton was most gratifying, and not only did the 24 members who attended thoroughly enjoy themselves, but learned more about their work and duties in those ten days than they ever would in ten months over the air. The personal details will be found under VMC notes.

From the instructional point the camp was an excellent means of seeing exactly what the members' difficulties were regarding procedure, and many misunderstandings were cleared up in a moment. It also afforded the study of a different system of training to be brought about shortly. Every member present was requested to supply suggestions relating to the whole of the Reserve training, and the most frequently occurring demand was for more and more exercises and Morse receiving practice. It was realised by all that there is a tremendous amount of procedure to be learned yet before anyone may hope to call himself a proficient service operator. Exercise work is going ahead in VMC, in order to fulfil the annual training programme for the year just about to end, so that this district may start off next year with operators of a fairly high standard. It is hoped that the same spirit for work will be aroused in all other districts also.

"Be prepared!" is a great motto. It should be one belonging to any body or service whose principle excuse for existence is to do work in emergencies. The strong point of the Reserve is its power to operate with the permanent forces at a moment's notice, and carry out important duties, especially when the instructions are received as a surprise. This is being very much demonstrated at the time of writing these notes. R.A.A.F. machines seem to be scattered all around the Commonwealth, and communications to and from the detached aircraft with their bases have not fallen down for one moment. This function was simply due to the stations called up to do work being in instant readiness for operation. Reservists in Brisbane, Rockhampton, Alice Springs, and other places are handling hundreds of words of traffic daily. If these members had not been prepared they could not have succeeded in carrying out their job.

Therefore, briefly, it must be the aim of every member to have both himself and his station on the mark for official communications. If these are not available, why have a Reserve? The Reserve is an emergency service, and it is the duty of every member to BE PREPARED for co-operation at any time.

Personalities

After hearing so many varied opinions as to the different "B" Batteries operating at present, we made enquiries during the month as to the best power, consistency and service for receiving, transmitting and everyday use, and to pass the information on to other interested experimenters. One battery stood out—the Diamond P. 5, which, by the way, has just recently been put on the market. We visited the Diamond P. 5 factory and settled down with their chief technician to an analytical investigation. Briefly the results of our investigations are as follows:—

1. "P.5's" will wear away only when actually in use. Reason: Electrolyte is the name given to the jelly inside dry batteries which eats away the zinc cells, so creating current. A corrosive electrolyte can eat away the zinc even when the battery is switched off. But, "P.5" electrolyte, unlike that of other batteries, will not do this. This means longer life.

2. "P.5" recuperation—Recovering power overnight. Reason: The attacking of the zinc in a dry battery causes hydrogen to appear inside the battery and this has to be removed by chemicals in the negative electrode. A feature of the "P.5" is the use of high grade materials in the battery electrodes. The hydrogen cannot drag the "P.5" battery down—it is removed as soon as it forms. Because of these "P.5" treated electrodes, the "P.5" battery will actually recover power overnight, every night, for months on end.

3. "P.5" is noiseless and efficient at a low voltage. Reason: "P.5" will give undistorted current at a low voltage. Some batteries become noisy when their voltage drops, but "P.5" will continue to work a set efficiently down to the lowest possible drop. This also provides for maximum life.

4. "P.5" will not suddenly collapse. Reason: "P.5's" will carry on working with a gradual falling off in power. Ample warning will be given to the user before new batteries are required.

5. "P.5" Consistency. Reason: There is no marked difference in any "P.5's"—batch or individual batteries. The same standard of performance is maintained throughout.

6. "P.5" has been proved over months. Reason: The "P.5" is not an overnight production. Ever since the

Diamond Factory announced their Per-trix association the technical department of both companies have been seeking and testing for just what the "P.5" now is. The "P.5" has been proved in all its features—it is not offered as an experiment.

Amateurs who are realizing more and more the advantages of dealing with P. and L. Wireless Supplies Pty. Ltd., of 11 Hardware Street, Melbourne for their requirements, will be interested in a fresh announcement. This firm has installed a forming plant for electrolytic condensers, and their experts are at your service as always.

Australian Engineering Equipment Co. Pty. Ltd., at Evans House, 415 Bourke Street, Melbourne, whose advertisement appears in another column announce that they are in receipt of a further stock of the famous Birnbach Insulators, this time brown instead of white. Hams will be interested to know that the last lot that went like the proverbial hot cakes has been replenished.

ULTRA HIGH FREQUENCIES

All VK3 stations operating on the ultra high frequencies are asked to mail direct to VK3WG, W. R. Gronow, 2 Anthony Street, Glen Iris, S.E.6, Victoria, their call signs and addresses (giving some idea of their location), to be included in the group map of U.H.F. stations now in the club rooms of the Victorian Division. By this map we hope to show experimental stations' locations in order to permit easy reference by members. Please indicate what bands you are operating on, 28mc., 56mc., 112mc., 224mc. Don't forget that the council have decided to award the "Gadsden Trophy" for the most outstanding work on these bands between June 1st, 1935—June 1st, 1936. Complete logs of experiments and results must be kept during this period.

It is the best trophy ever awarded in this division, and it will look nice on your shelf.

The trophy is to be awarded annually, so—Go To It, Gang—and be the first holder of this real experimenter's trophy.

AMATEURS !!!

Are you on the best buying basis for your requirements?

If not, you will find that our prices compare more than favourably with what you now pay.

We carry a large range of publications both local and American, devoted to Amateur Radio, short wave, etc etc.

P. & L. WIRELESS SUPPLIES PTY. LTD.

11 Hardware Street, Melbourne, F 4323

(New Price List just available. If you did not receive one let us have your address)

QUARTZ CRYSTALS

Every Crystal tested to 50 watts input to Penthode Crystal Oscillator
Accurate grinding to .03 per cent. 8.5 M.C., 20/-; 7 M.C., 30/-
100 K.C. Xtals. 465 K.C. Xtal "Gates. Prices on application

PROMPT DELIVERIES

MAXWELL HOWDEN (VK3BQ) CONS. RADIO ENGR.

13 Balwyn Road, Canterbury, E.7.

HAMADS

8d. per line. Address correspondence to
Advertising Manager, "Amateur Radio," 126
Whitehorse Road, Box Hill, E.11.

BRIGHT STAR RADIO—VK3UH
517 Lower Malvern Road, Glen Iris,
S.E.6.

Crystals accurately ground from best
Brazilian quartz, and tested to 50
watts input to penthode oscillator
200, 160, 80 meter, 10/-; 40 meter,
£1.

Power transformers, 300 watt, 2000
volts each side of centre tap, at 150
milliamps, £4; lower voltages cheaper.
Filament transformers, any number
of windings, 10/-

Call, or write above address. Satis-
faction guaranteed.

FOR SALE:- Astatic Crystal Microphone,
Type D-704. Bought new recently, and in con-
dition as new, in own carton. Owner must sell as
retiring from B.C. Band. Small stand and black-
wood base included if desired. Price £4-10-0
or nearest offer. VK3MK, Redcliffs, Vic.

Short Wave Receiver. 8 valve a.c. super-het
Dynamic Speaker. £12-10-0. Hoobin C 11660

THE TRANSMITTING EQUIPMENT COY.

75 Were Street
Brighton, S. 5, Victoria
Telephone X 4285

Manufacturers of "TECO" Trans-
mitting and Receiving Radio Equip-
ment.

Dealers in secondhand Radio Equip-
ment.

"SEE US FIRST" before you get
a quote from anyone else. 203A, 845,
211, Valve Sockets, 12/6 each. Reiss
Microphones (Bakelite), £3/10/-; Dust
Proof Crystal Holders, 5/-; Micro-
phone Transformers, 12/6; Crystals
for 200, 80 and 40 Metre Bands.

Microphone Stands (various), prices
on application. Call Signs, 5/- each—
over one, 3/6.

We make "HAM" Gear to order.

It is the **PLAIN DUTY**
of every member of W.I.A.
to support the advertisers in
these pages, and when doing
so **MENTION** "Amateur
Radio". Not much trouble
to **YOU**—but it means a lot!

SIEMENS

"ELLIOTT"

BRITISH RADIO INSTRUMENTS



For **ACCURACY RELIABILITY**
and SERVICE

- STOCKS OF MINIATURE INSTRUMENTS AVAILABLE FOR D.C., A.C. AND R.F. MEASUREMENTS IN MOVING COIL, MOVING IRON, THERMO COUPLE AND RECTIFIER PATTERNS.
- Amateurs are invited to submit to us their instrument problems. We will gladly assist with our advice and experience.

■ ■ ■ ■

SIEMENS (AUST.) PTY. LIMITED

SYDNEY, MELBOURNE, BRISBANE, ADELAIDE

H. C. Little & Co. Ltd., PERTH.

F. H. Fearon, NEWCASTLE

Sole Agents in Australia for the English Electric Co. Ltd., London